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Message from Subspecialty Division

The term specific language impairment (SLI) refers to a significant impairment in spoken language ability when there is no obvious accompanying condition such as mental retardation, neurological damage or hearing impairment. In Child Assessment Service (CAS), diagnosis of SLI is made for children 4 years or above with inclusionary and exclusionary criteria specified (Appendix). Many of these children presented early with language delay, sometimes labeled as late talkers. Majority of these late talkers can outgrow the language problem. However, there is still no reliable factor that can predict the outcome. According to the United States, the prevalence rate is estimated to be around 7.4% in kindergarten children.[1] These children have significant impairments in all aspects of spoken and written language functioning.[2] They may present as having language delay in preschool and/or having learning and behaviour problem in primary school. In this issue, we present the local profile of children with SLI based on data collected from the database of CAS in the period from 1 April 2006 to 31 March 2007. We also include an update on major characteristics of SLI. Finally, a local study on the clinical subtypes of SLI is presented.

Clinical Profile of Specific Language Impairment in the Year 2006/07 in CAS

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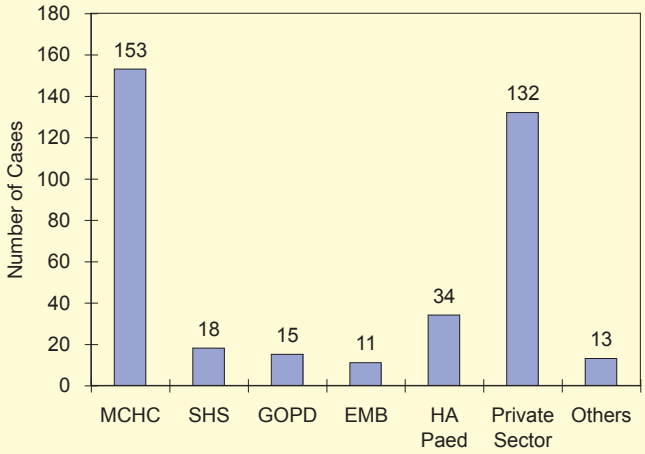
Introduction

In this study, we include all cases 4 years old and above encountered by CAS during the period 1.4.2006 to 31.3.2007 with the diagnosis of language impairment. Cases with cognitive impairment (i.e., borderline developmental delay and mental retardation), significant hearing loss, autistic spectrum disorder or cerebral palsy were excluded from this analysis. As a result, a total number of 389 cases were selected for further analysis, which is around 6% of new cases referred to CAS within that period. We will discuss the clinical pattern of these cases.

Sources of Referral

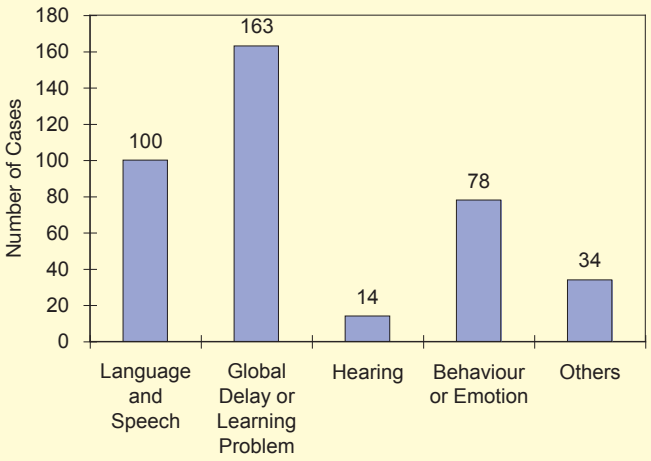
Family Health Service (FHS) was the major source of referral accounting for approximately 39% of the total new cases diagnosed with SLI. Children with language problem were identified by the Developmental Surveillance Scheme at FHS and parent supportive service was provided. Those children with significant or persistent problems were then referred to CAS for further assessment. Other common referrers included the paediatricians from the Hospital Authority and private practitioners (Figure 1).

Figure 1. Referral sources for age 4 years or above



The most common reasons for referral were, of course, language and speech problems. Learning and behavioural problems were also parents' major concerns (Figure 2). It is because language is the medium for learning and communication. Children with language impairment would have difficulty in understanding what was taught in classroom and in carrying out conversation with peers.

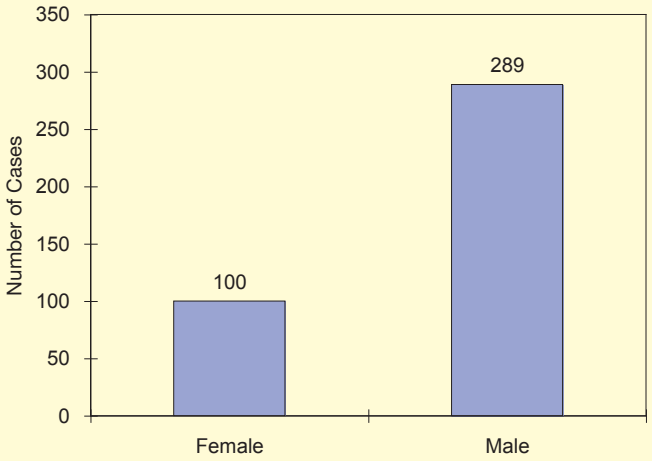
Figure 2. Referral reasons for age 4 years or above



Sex Ratio

The male to female ratio was 3 to 1 and was quite consistent for various age bands (Figure 3). This difference is exaggerated when compared with findings in literature.[1] Further study is necessary to confirm if there is a referral bias when compared with other reports from community sample.

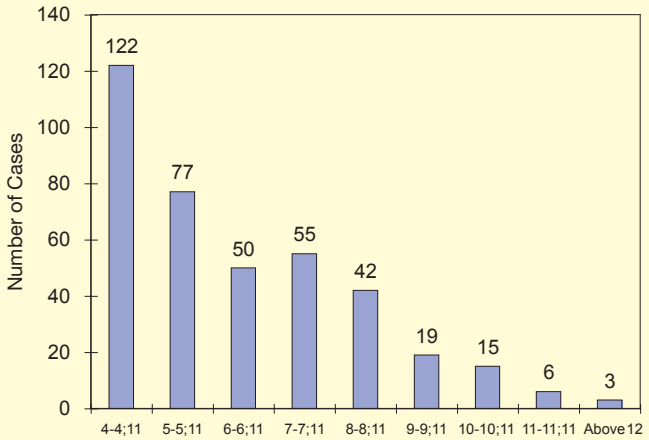
Figure 3. Newly diagnosed cases by sex for age 4 years or above



Age of Referral

Majority of cases (40%) with language delay were referred and diagnosed at 2 to 3 years old when the diagnosis of SLI cannot be made. It is the time when most parents expect their children to speak. While the referral number of cases above 4 years old declined with age, we need to be aware of the myth of illusionary recovery, lack of public awareness of SLI and professional consensus on diagnosis (Figure 4).

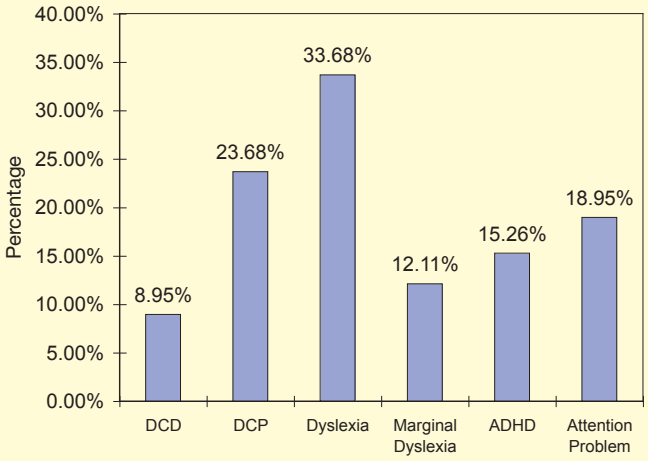
Figure 4. Newly diagnosed cases by age



Common Associated Features

Children with specific language impairment are known to be associated with comorbidities. Conversely, children known to psychiatric settings have high rates of language disorders.[3] In this cohort, 46% children with age 6 years or above suffered from reading difficulties and 34% fulfilled the diagnosis of dyslexia. Furthermore, 33% children suffered from motor coordination problem and 9% fulfilled the diagnosis of developmental coordination disorder. 34% children received complaints of attention problem with or without hyperactivity and 15% of these children fulfilled the diagnosis of attention deficit and hyperactivity disorder (Figure 5).

Figure 5. Comorbidities for those 6 years old or above



Discussion

It is a common phenomenon that most children with SLI are referred to our service at preschool age. Further study on the local incidence of SLI is needed due to the relative small sample size of subjects included in this study. Based on our findings on common comorbidities in children with SLI, we should take note of the children's language ability when assessing their learning and behavioural problems.

The present study is a preliminary attempt to capture the clinical characteristics of children with SLI served by CAS. We hope that with the increase awareness of specific language impairment in public and the launch of Cantonese Expressive Language Scales (CELS) and Hong Kong Cantonese Oral Language Assessment Scale (HKCOLAS), majority of children with language impairment at school age can be identified and supported. The Enhanced Speech Therapy Grant of Education Bureau enables mainstream schools to provide service to children with SLI by school based speech therapists. However, further research and professional sharing are important to identify effective ways of remediation and accommodation to enhance the learning for children with SLI. Last but not the least, comorbidities are common in children with SLI according to our data and should always be included in the assessment and remediation regime.

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Appendix

Diagnostic criteria for SLI in CAS

Factors	CAS working definition
Age	4 years or above
Language ability	1. HKCOLAS* score of –1.25 SD or lower in two or more subtests OR 2. RDLS* verbal comprehension or verbal expression score of –1.25 SD or lower
Non-verbal intelligence	1. HKWISC* performance IQ of 85 or higher 2. If the above is unavailable, those with limited IQ / borderline delay or worse are excluded
Hearing	Excludes hearing loss at moderate grade or worse
Otitis media with effusion	No recent episode
Neurological dysfunction	No evidence of seizure disorders, cerebral palsy, brain lesion; not under medication for control of seizures
Oral structure	No structural anomalies
Oral motor function	Pass screening using developmentally appropriate items
Physical and social interaction	Excludes autistic spectrum disorder

* HKCOLAS : Hong Kong Cantonese Oral Language Assessment Scale
RDLS : Reynell Developmental Language Scale
HKWISC : Hong Kong Wechsler Intelligence Scale for Children

Subgroup of Cantonese-Speaking Children with Specific Language Impairment: A Pilot Investigation

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[1] Speech Therapist [2] Speech Therapist

Introduction

Past research characterized children with SLI as a homogenous group. Children with SLI were described to speak less frequently and speak less accurately, process information at a slower rate, and produce more errors than their peers. In general, their rate of language development is slower and they may never achieve the language skills of their peers even as adults. This notion has been challenged by academics and therapists working with SLI who found that children with SLI presented to them with a variety of clinical pictures.[1] There has been much discussion both in the literature and in current practice regarding the heterogeneous nature of children with SLI. In order to understand the nature of deficits of children with SLI, researchers tried to apply different types of clinical subgrouping techniques based on clinical/linguistic profiles and psychometric measures. The best-known of the clinical subgrouping was provided by Rapin and Allen.[1] They outlined three subgroups of children referred for speech and language problems on a clinical basis. Aram, Ekelman & Nation[2] also investigated the development of 47 children across a number of years and revealed six specific patterns of language impairment. The idea of subgroup children with SLI has been conducted by many other researchers such as Fletcher,[3] Conti-Ramsden, Crutchley & Botting.[4] Most of the studies of subgroups of children with language impairment have been conducted with English-speaking children. The possibility of identifying subgroups for Cantonese-speaking children is unknown. The present investigation attempted to explore the possibility of subgrouping Cantonese-speaking SLI children based on their linguistic profiles in a standardized language assessment tests.

Methods

Participants

Fifty school-aged children who have been assessed by speech therapist as having SLI were recruited from Child Assessment Service. All of these children had performance IQ score of not less than 85, with no diagnosed neurological and psychological problems, no significant sensory impairment and with no history of exposure to language.

Measures

Hong Kong Cantonese Oral Language Assessment Scales[5] were administered to all of the participants. This is a comprehensive test battery with six subtests specifically designed to assess the linguistic competence of school-aged children. The six subtests are Test of Hong Kong Cantonese Grammar, Textual Comprehension Test, Word Definition Test, Lexical-Semantic Relations Test, Narrative Test and Expressive Nominal Vocabulary Test. Scores obtained by children with SLI were compared to the mean score in the norms of the test. To better understand the areas of deficits of children with SLI, we group the subtests based on the linguistics levels measured, i.e., Lexical Level, Sentence Level and Textual Level. Table 1 summarized how the subtests are grouped. Word definition test is excluded from the analysis as this test involves more meta-linguistic aspects of language than the other subtests.

Table 1. Subtests included in three linguistic levels

Levels	Subtests
Lexical Level	Expressive Nominal Vocabulary Test
	Lexical-Semantic Relations Test
Sentence Level	Test of Hong Kong Cantonese Grammar
Textual Level	Textual Comprehension Narrative Test

Analyses and Results

We adopted a profile approach in our analysis, that is, we used the normative data as the basis and compared the scores of SLI children in three linguistic levels with respect to those of the normative group. Scores falling one grade level behind his grade mean for each linguistic level are considered as failure to achieve normal performance.

Table 2. Number of levels that SLI group failed

Levels	No. of SLI children
No failure	3 (6%)
Failed 1 level	4 (8%)
Failed 2 levels	7 (14%)
Failed 3 levels	36 (72%)

72% of the SLI group failed in all three levels. 14% of the group failed in two levels and 8% failed in 1 level. Among those children who failed in one to two levels, different patterns of failure are noted. For children who failed two levels, five of them failed Sentence and Textual Level, one of them failed Lexical and Textual Level and the remaining one failed Lexical and Sentence Level. For children who failed one level, two of them failed Textual Level, one failed Sentence Level and one failed Lexical Level. Interestingly, three cases who were diagnosed as having SLI passed all three levels of measures (Table 2).

We also analyzed the data to see which level is causing difficulty for SLI children. As expected, we found that most of the SLI children had difficulty in Sentence Level and Textual Level than in Lexical Level. Almost 90% of SLI group failed to attain an age-expected score in tests of Textual Level (Table 3).

Table 3. Number of SLI children failed at different linguistic level

Levels	No. of SLI children who failed in that level
Lexical Level	39 (78%)
Sentence Level	43 (86%)
Textual Level	44 (88%)

Discussion

Three major approaches have been used by researchers to identify subgroups of children with SLI. They were the clinical approach as used by Rapin and Allen[6]; the psychometric approach as proposed in Aram and Nation's study[7], Conti-Ramsden, Crutchley and Botting's study and the linguistic approach as adapted by Fletcher.[3] The present study attempted to group children with SLI according to linguistic levels by their performance on a standardized psychometric test. We found that 72% of the SLI children failed in all three linguistic levels. We also found 10% of the SLI children failed in Sentence and Textual Levels but not Lexical Level. Our results confirmed that SLI children predominantly have problems at various linguistic domains including vocabulary, grammar and narrative skills. For the remaining SLI children, the levels that they showed breakdowns are not as clear cut as what one expected. There are children who passed Sentence Level but failed Lexical and Textual Levels and there are children who passed Textual Level but not Lexical and Sentence Level. It is not easy to draw a clear profile for these remaining children. It is well acknowledged that vocabulary is the basic building block for development of sentences and to higher discourse level. However, its

link to syntactic development and discourse development and the relation among these three levels could be very complex. Therefore, SLI children might show different patterns of breakdown at these linguistic levels.

Another point to note is that most children with SLI showed difficulties in the Textual Level. This finding was not surprising as Textual Level required children to integrate various knowledge abilities. Textual comprehension and story retelling demanded the use of linguistic knowledge, pragmatic knowledge, cognitive and social ability integrally. Researchers have pointed out that SLI children have deficit in general processing capacity and thus affected their performance in integrating various abilities and knowledge when they performed textual comprehension and story retelling.

Limitations

Like most of the research that has examined the different profiles of children with SLI, our pilot investigation is done on a cross-sectional basis. Researchers have pointed out that SLI is not a unitary, static condition but a dynamic difficulty that evolves with developmental time.[8] It would be interesting to see how the SLI children evolve in time by performing investigation on these children in a longitudinal manner.

Conclusion

Our study adopts a profile approach to place Cantonese-speaking children with SLI into subgroups. We found that most of the SLI children studied failed in all three linguistic levels. Our study shed the lights for further studies of subgrouping SLI children. However, to successfully prevent and/or remediate SLI children, a better understanding of its underlying nature is mandatory.

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Characteristics of Specific Language Impairment

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[1] Speech Therapist

Specific language impairment (SLI) can be described as a pure form of developmental disorder as well as a disorder of exclusion. There are a lot of studies investigating the characteristics of SLI in western countries. It is of theoretical and practical importance to study the characteristics of SLI in order to have a more clear understanding of the diagnosis as well as to provide an effective treatment plan for the SLI children. From the linguistic aspect, we can further investigate their difficulties in language across three different levels that are the lexical, sentence and textual levels.

Lexical Level

Some children with SLI had the history of late acquisition of their first words. For instance, Trauner, Wulfeek, Tattal and Hesselink[1] found that children with SLI produced their first words with an age of almost 23 months compared with almost 11 months for normally developing children.

Apart from the late onset of first word, SLI children also had difficulty in developing their productive lexicon. Watkins, Rice and Moltz[2] investigated that pre-school-age children with SLI used a more limited variety of verbs than mean length utterance controls. Similar findings were obtained from the study of Conti-Ramsden and Jones.[3] They confirmed that SLI children had fewer verb types and tokens than the normally developing children. In Hong Kong, Stokes and Fletcher[4] carried out a study examining the lexical diversity of Cantonese speaking SLI children in Hong Kong. The results were different from the previous studies that there was no difference between SLI children and their language-matched peers control in use of verb tokens, but there were significant differences in noun tokens and types.

In our clinical observation, lexical limitation was frequently identified in school-age children with SLI through tasks like word recall and convergent thinking tasks. We noted that the SLI children had problem in retrieving the superordinate and hyponym in terms of the accuracy when comparing with the age controls.

Moreover, SLI children might have word-finding problem. They produced long pause in speech , frequent circumlocution and used of nonspecific words as well as naming errors were frequently noted. In naming tasks, we noted that SLI children have more naming errors than normal peers and some of the errors are semantic errors. For instance, they named 郵箱 (mail box) as 信 (letter) or 衫袖 (sleeve) as 領 (collar).

Sentence Level

Bishop[5] reported that SLI children performed more poorly than age-matched controls in all aspects of grammar. For instance, they exhibited errors on many inflections and function words involving tense, definiteness, person, number and gender.[6]

Johnston and Kamhi[7] found that language impaired children's mean length of utterance (MLU) contained fewer logical propositions and more syntactic errors when comparing with the normal peers. Klee and the colleagues[8] used the MLU and lexical diversity (D) to evaluate the language ability of Cantonese speaking SLI children in Hong Kong. The results indicated that SLI children in Hong Kong produced significantly shorter utterance and they demonstrated significantly less diverse vocabularies in conversation level than normal peer group.

Textual Level

Narrative skill plays an important part in daily communication for school-aged children. It helps to use this skill to tell event, give presentation in class as well as to tell story from the text. The parents of those SLI cases usually complained about their children's failure to tell a story, performing the composition task in Chinese subject, writing their diary or doing the free writing task. SLI children had problem in these areas and it certainly will affect their academic performance.

SLI children failed to conceive the story as a coherent text. A large amount of western studies confirmed that SLI children performed significantly poorer in narrative production.[9-12]

From our clinical observation, we noticed that SLI children performed significantly poorer in narrative skill. They missed a lot of important details and tended to use unclear referential expressions in referent introduction or switching of reference. The listener might find it difficult to follow the story line without clear referents. Moreover, SLI children failed to use the more sophisticated content words such as the 4 character idiom to elaborate the episode. Furthermore, they tended to use simple

sentence structure to describe the events and their actions. They also failed to use a wider set of syntactic structure in their narrative production. Their limited ability to use different types of connectives in narrative will further affect the "cohesive ties" of the whole story.

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Recent Publications and Scientific Presentations

Publications

High Risk Follow-up Working Group (Kowloon Region). Neurodevelopmental outcomes of extreme-low-birth-weight infants born between 2001 and 2002. Hong Kong Med J 2008;14:21-8.

Lam FWF, McBride-Chang C, Lam CCC Wong SWL Chow Y, Doo S. Towards early identification of dyslexia in Chinese preschool children: a study on reading and cognitive profile in children with genetic risk of dyslexia in Hong Kong. HK J Paediatr (new series) 2008;13:90-8.

McBride-Chang C, Lam F, Lam C, Doo S, Wong SWL, Chow YYY. Word recognition and cognitive profiles of Chinese pre-school children at-risk for dyslexia through language delay or familial history of dyslexia. Journal of Child Psychology and Psychiatry and Allied Disciplines 2008;49(2):211-8.

Tang KML, Chen TYK, Lau VWY, Wu MMF. Clinical profile of young children with mental retardation and developmental delay in Hong Kong. Hong Kong Med J 2008;14:97-102.

Tang KML, Chen TYK, Lau VWY, Wu MMF. Cognitive outcome of children with developmental delay in Hong Kong. HK J Paediatr (new series) 2008;13:157-164.

Scientific Presentations

The following presentations were conducted between January and October 2008:

CUHK M. Ed Course: DCD and LD on 30 January 2008 by *Chui MY*.

Selective Dorsal Rhizotomy on 28 June 2008 by *Lau PH*.

Speech and language assessment for Cantonese speaking children: an update on 27 August 2008 by *Ng HK*.

HKU SPACE Certificate Course on SLD from 2 to 9 October 2008 by *Lam WF*.

Workshop on DCD on 25 October 2008 by *Lee MY*, *Ng MY*, *Leung YW*.

Next Issue

The next issue of CASER will be released in March 2009. The featured topic is on attention deficit/hyperactivity disorder.